CONSERVATION
of
CANADA'S RESOURCES

CURRHIST
LB
1581
A33
gr.6
sect.B
c.5

DEPARTMENT OF EDUCATION
EDMONTON, ALBERTA

QUAECUMQUE VERA

Ex libris
UNIVERSITATIS
ALBERTÆNSIS

BOWDEN INSTITUTION

This Resource Unit has been published under the direction of the Provincial Elementary School Curriculum Committee of the Department of Education, which appointed a Resource Unit Sub-committee to evaluate and revise resource units prepared by various school systems, with a view to making those of outstanding value available to the teachers of this province.

THE ELEMENTARY SCHOOL CURRICULUM COMMITTEE:

Mr. M. L. Watts, Director of Curriculum, Chairman,
Mr. A. G. Bayly, Assistant Superintendent in charge of Elementary Education, Edmonton Public School Board,
Miss M. Caldwell, Faculty of Education, University of Alberta,
Mrs. Inez K. Castleton, Representative of the Alberta Teachers' Association, Calgary,
Mr. L. A. Daniels, Supervisor of Elementary Schools, Calgary Public School Board,
Mr. S. A. Earl, Co-ordinator of Teacher Education,
Mr. M. O. Edwardh, Assistant Director of Curriculum in charge of Elementary Education,
Mr. W. G. Hay, Superintendent of Schools, Hanna,
Mrs. Dean Holroyd, Representative of the Alberta Federation of Home and School Associations, Warner,
Mr. E. McKenzie, Representative of the Alberta Teachers' Association, Medicine Hat,
Mr. N. M. Purvis, Superintendent of Schools, Taber,
Mrs. H. F. Smith, Representative of the Alberta School Trustees' Association, Medicine Hat,
Mr. A. B. Evenson, Associate Director of Curriculum, Secretary.

THE RESOURCE UNIT SUB-COMMITTEE:

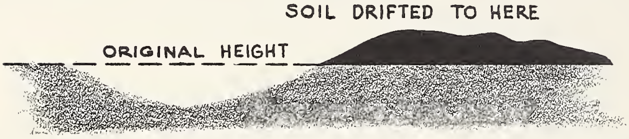
Mr. M. O. Edwardh, Chairman, Assistant Director of Curriculum in charge of Elementary Education,
Mr. A. G. Bayly, Assistant Superintendent in charge of Elementary Education, Edmonton Public School Board,
Mr. W. L. Ogilvie, Principal, Braemar School, Edmonton,
Mrs. Quigg, Teacher at Spruce Grove School,
Mr. H. J. McKim Ross, Teacher at Parkallen School, Edmonton,
Mr. T. J. Reid, Principal of Queen's Avenue School, Edmonton.

"Conservation of Canada's Resources" was compiled by the Edmonton Elementary Teachers' Association, in co-operation with the Edmonton School Board. It has been revised by F. W. Wootton, Principal of Hazeldean School under the direction of the Resource Unit Sub-committee.

NOTE: This unit has been designed primarily for use in section B, Grade VI, but may be of value in other sections.

DID YOU KNOW?

That there is less than 1 acre producing crops for each person in the world.

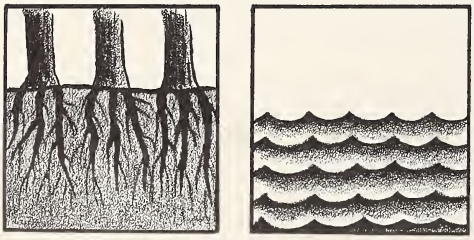


That in the dry 1930's more than 800,000,000 tons of top soil were blown off the Great Plains Wheatlands by winds.

It takes over 1,000 years to make an inch of top soil. Don't let it run away.

In 1935 it was found that in the United States alone 35,000,000 acres of land had been almost completely destroyed by incorrect farming methods.

A gully in Georgia was begun in 1890 by water dripping off the eaves of a barn. It has now become 200 ft. deep and has destroyed 3,000 acres of farm land.



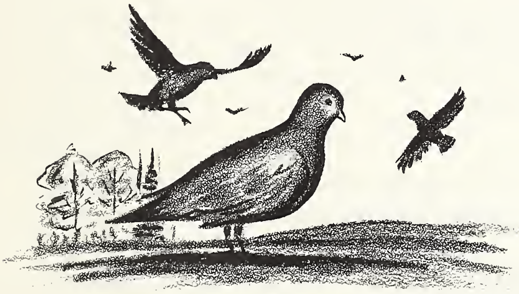
Forest soil holds half of its volume in water.

UNIVERSITY LIBRARY
UNIVERSITY OF ALBERTA

Forests, if protected, are one of our most readily renewable resources.

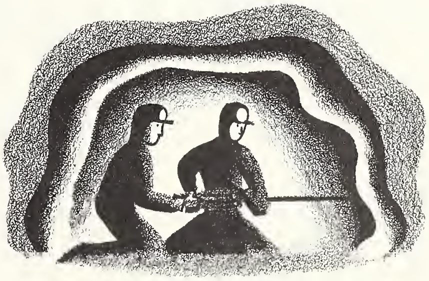
It has been said that in the colonial days a squirrel could travel in the treetops from the Atlantic coast to the Mississippi River without once touching the ground.

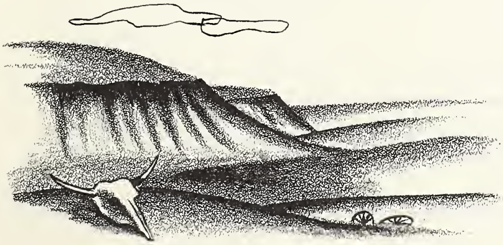
Since the time of La Salle, Cartier, and Champlain the Canadian forest has been reduced to half its original greatness.



In 1813 flocks of passenger pigeons darkened the sky. The last one died in captivity in 1914.

It is estimated that only a 10-20 year supply of high grade iron ore remains in the United States Lake Superior area.





The area described by Moses, 3,000 years ago, as a land flowing with milk and honey has lost its red soil down to bed rock. Even in the valley floors only the dregs of the soil remain.

CONSERVATION OF CANADA'S RESOURCES

This is a timely and important unit designed to impress young children with the value of our vast wealth in Forests, Rich Soil, Water, Minerals, Fish and Wild Life; and to help them discover the part we all can play in preserving these things for the wise use of our own and future generations.

THE PROBLEM

No physical problem facing our country is graver than that of conserving our natural resources. Canada is one of the **last virgin areas of the world** containing some of the world's last reserves of raw materials. But these resources are exhaustible and they are not as limitless as some would have us believe. Already, the drifting away of fertile topsoil, the gradual disappearing of forest resources, the reduction of wild life, the depletion of our fisheries, waste in coal and oil, and the destruction of scenic beauty are causing concern.

Fortunately steps are being taken to conserve and improve our resources before it is too late. As a young country, we are in a position to learn and profit from the experiences of older civilizations which misused their resources—places in China, India, Iraq and Africa where may be seen thousands of square miles of denuded, eroded hills where once grew dense forests.

In contrast to this we can learn many good lessons in conservation from the practices being followed in many European countries. Measures taken by our neighbors in U.S.A. to offset the wasteful depletion of their resources in the past can also be studied with benefit.

Awareness of this adult problem and the plans underway to meet it can be profitably studied by children at the Grade Six level. Under the direction of a teacher who is herself genuinely concerned and enthusiastic about conservation, children will gain a lasting appreciation of this important subject.

Excellent Background Information For Teachers—
(Available in the Teachers' Professional Library)

1. **"Conservation in Canada"**—O. M. McConkey, Dent, 1952.
2. **Teaching Social Studies in the Elementary School**—R. Preston, pages 78, 123.

Suggested Time to Develop: SPRING or FALL.

OBJECTIVES

I. ATTITUDES AND APPRECIATIONS

(a) To develop conservation-minded junior citizens.
(b) To develop a rational attitude of mind as a foundation for suitable action. (See Preston, page 124.)
(c) To develop the basic idea that our civilization is dependent on our natural resources.
(d) To develop a recognition that science cannot altogether provide substitutes for natural resources or make up for waste.

II. UNDERSTANDINGS—To gain a better understanding of:

(a) The meaning of conservation of natural resources.
(b) What the balance of nature means.
(c) The necessity for and methods of preserving the balance of nature.
(d) Various ways in which our natural resources have been and are being depleted.
(e) How we as citizens can do our part for the present and future of our country in regard to conservation.
(f) General understanding of government regulations re: exploration and enjoyment of natural resources, game laws, mining laws, etc.

III. ABILITIES AND SKILLS

(a) To acquire the ability to distinguish different types of trees, birds, animals, fishes, etc.
(b) To learn methods used in the prevention of soil erosion (water, wind, etc.)
(c) To discover ways by which we can care for our wildlife.
(d) To learn methods recommended for catching fresh and salt water fish.
(e) To interpret diagrams, maps, scales, etc.
(f) To acquire techniques for prevention of forest fires when camping. e.g. How to lay and care for camp fires.

(g) To avoid unnecessary wastes of our natural resources by learning conservation techniques such as (1) How to plant trees, shrubs, cuttings, plants and seeds. (2) How to keep a garden fertile. (3) How to limit one's catch of fish or bag of game to one's immediate needs.

SUGGESTED MOTIVATION AND ORIENTATION

1. INTRODUCTORY LESSONS

(a) The teacher shows the need for conservation. Followed by a general discussion.
(b) A film followed by a discussion (see List).
(c) A filmstrip supplemented by teacher comment and class discussion (see List).
(d) See Preston, **Teaching Social Studies in the Elementary School,** for many helpful suggestions for initiating this unit, page 78.
(e) "Moving Ahead," the Grade VI reader of the Winston series has a unit on this theme that is ideal for motivating purposes. Pages 126-157.

List of Resources that Require a Policy of Conservation

1. Forests
2. Soil
3. Water
4. Mineral Resources
5. Oil and Natural Gas
6. Wild Life
7. Fisheries

Establishing the Setting:

A lesson or lessons on resources of Canada geographically with the use of outline maps in which areas are clearly shown—a separate map for each resource.

N.B. Make use of natural resource maps printed by the Dominion and Provincial Governments and in such books as are mentioned in the bibliography of this unit.

2. CHOOSING THE SCOPE OF THE ENTERPRISE

(a) By question and suggestion, the class with the teacher's help, broadly outlines the possible scope of conservation in Canada. (See List above.)
(b) A survey is made of available materials in library of school.
(c) Democratic exercise of choice by pupils. Pupils vote on full list to decide which resources they wish to explore or study with a particular emphasis on conservation. Joint study of 1, 2 and 3 desirable.

3. DISPLAYS

(a) Picture gallery on theme of conservation.
(b) Magazine rack containing any magazines stressing conservation (even at adult level), viz. Canadian Nature, The Beaver, etc., Government booklets and pamphlets.

NOTE: A very broad outline is given here from which the teacher and class may draw the scope of the enterprise. The study of any one of the fields outlined would provide much material and some note should be taken of all of them. However, soil and forest conservation are primary and should be given much time and careful study.

THIS IS NOT THE WAY TO KEEP ALBERTA GREEN
Courtesy Dept. Economic Affairs

SECTION I — CONSERVATION OF FORESTS

("This is the forest primeval—the murmuring pines and the hemlock."—Longfellow.)

Objectives

1. To teach the need for conservation.
2. To increase the pupils' knowledge of Canada's great forest resources. (The geography of this study.)
3. To acquaint the pupils with the work of the Departments of Forestry of the Federal and Provincial governments.
4. To teach the causes of the depletion of our forests.
5. To teach the methods of prevention of the wastage of our forests.

Motivation

1. Have pupils list all the things they can think of that are products of our forests.
2. Discuss questions like the following:
   - (a) How does cutting down forests cause floods?
   - (b) How many trees does it take to make one newspaper?
   - (c) What has happened to many of the forests which were here before America was discovered?
   - (d) How is lumber made?
   - (e) Is it bad conservation to cut trees for Christmas trees?

PROBLEM	ACTIVITY	REFERENCE
1. Are Canada's forest resources important?	1. Make maps of Canada's forests, natural regions and forest reserves.	1. Forest Conservation
	2. Make collections of woods. List their uses.	Mines & Resources
	3. Make charts of graphs showing the value of Canada's forest products, exports, etc.	Ottawa pp. 3-12, 31.
	4. Make a map showing Canada's National Parks.	"Canadian Woods" (their properties and uses) Forestry Branch, Ottawa.
	5. Report on the value of the tourist industry.	
	6. Scrap book—pictures and notes re the beauty spots of Canada.	
	7. Have a debate: **"Resolved**—that trees are worth more for their beauty than for their use."	
2. How do the forests affect the soil resources, power, wild life, and water resources?	1. Report on the effect of shelter belts on soil drifting.	See: McConkey— "Conservation in Canada"
	2. Report on the effect of removing brush on the moisture conditions of land.	Dent.
	3. Report on the effect of soil washing where forests have been cut down.	
	4. Scrap books—pictures and reports.	
3. What kind of climate is needed for forests?	1. Study various climates of the world comparing forested areas with deserts and plains.	"Principles of Human Geography"
How do forests affect climate?	2. Study Canada's climate with regard to the plains and forest areas.	—Huntingdon & Cushing Wiley & Sons

PROBLEM	ACTIVITY	REFERENCE
4. What are the natural enemies of the forest? (a) Frost (b) Decay (c) Tent-caterpillar, etc. (d) Fire (lightning, carelessness)	1. Make a chart showing the natural enemies (picture or specimen). 2. Study life history of insects harmful to trees. 3. Field trip to note the natural enemies studied. 4. How do you tell the age of trees?	
5. Is fire the greatest waster of forests?	1. Report on forest fires—how to prevent them. 2. Draw pictures of fires (Art). 3. Read about real life stories of forest fires and prairie fires. 4. Study the effect of fires on wild life.	ABC's of Forest Fire Prevention —Queen's Printer, Ottawa. Canadian Nature, January, February, 1954 pp. 16-17.
6. How do men waste the forests? (a) careless cutting of trees (b) careless starting of fires (c) neglect of reforestation	1. Chart a scrap book of ways man's greed and selfish carelessness wastes the forests (cartoons). 2. Make posters of the cause of forest fires. 3. Report on "The Cost of Forest Fires to Canada".	
7. What is the government doing to solve the problem of conservation of forests? (a) Forest Reserves (b) Shelter Belts (c) Reforestation	1. Study and Report on the governmental department set up for this work. 2. Write a brief history of the work done. 3. Make a table display of a fire station—airplane, lookout tower, etc. 4. Make a map of the forest reserves of Canada. 5. Find out how long it takes to grow a forest. 6. Study forest conservation methods of European countries.	
8. What is my responsibility as a youthful citizen of Canada to the problem of conserving our forests?	1. Make a chart of camp safety rules. 2. Report on "How to Make and Break Camp in the Woods or on the Prairies". 3. Learn the government fire regulations. 4. Report on Youth Organization—Boy Scouts, Girl Guides, etc. What is their attitude? 5. Have Scout or Fire Ranger talk to the class.	

REFERENCES — CONSERVATION OF FORESTS AND SOILS

NOTE: Starred references may be obtained at the School-Book Branch.

A—Teacher **B—Pupil**			**Suitable Particularly for Problems:**
A & B	1.	Conservation in Canada O. M. McConkey	General
A & B	2.	Forest Conservation— Dept. Mines and Resources, Ottawa	1, 2, 4, 5
A & B	3.	Canadian Nature, Jan. Feb. 1954	1, 2, 7, 8
A & B	4.	Map: Type of Farming Areas Dept. of Trade & Commerce, Ottawa	1
A	5.	Farming in Canada Dept. of Agriculture, Ottawa	1
A	6.	Features of Present Day Canada R. H. Coats	1, 4
A & B	7.	Water Erosion in Alberta Dept. of Extension, U. of A., Edmonton	1, 6
A	8.	Save Our Soil, D. Nesbitt Alberta Wheat Pool, 1950	2, 5
A	9.	Trash Cover Prevents Soil Erosion Line Elevators Farm Service	4
A	10.	Wooded Soils and Their Management Dept. of Soils—Dept. of Extension, Edmonton, Alberta	1
A & B	11.	Cropping for Profit and Permanency Dept. of Extension, U. of A.	1
A & B	12.	Alberta Forests Dept. of Lands and Forests, Edmonton, Alberta	1, 2, 4, 5, 6
A	13.	(a) Public Lands Open for Settlement (Central Alberta) (b) Public Lands Open for Settlement (Peace River) Dept. of Lands and Forests	2, 5
B	* 14.	Canada and Her Neighbors Taylor—Seiveright-Lloyd—Ginn	1, 5, 7, 3
A & B	15.	Britannica Junior—C.	1, 7
	* 16.	Geography of a Working World—McConnell — Harter Rand McNally S. S. Series	7, 3
	17.	World Geography—Thurston Faegle— Iroquois Publishing Company	2, 3
	18.	Canada Year Book	1, 7, 5
	19.	Team Work—Sewell Stockton New Citizenship Readers Unit 8	4
	* 20.	World Geography for Canadian Schools	1, 3
	21.	Van Loon's Geography Garden City Publishing Company	General
	22.	Fifty Trees of Canada East of the Rockies— J. S. Van Camp, T. E. Shaw Book Society of Canada	1
	* 23.	Earth—A Great Storehouse—	General
	* 24.	Garden and Its Friends—	
	25.	Forestry Lessons—Canadian Dept. of Resources and Development (Forestry Branch)	
	26.	ABC's of Forest Fire Prevention—R. M. Watt. Dept. of Resources Development, Forestry Branch, Ottawa.	

Suitable Particularly for Problems:

FILMS

1. Conservation of Natural Resources—
   Department of Education. T 89
2. The Big Marsh Lives Again (N. Manitoba)
   Q 169—30 minutes
3. Windbreaks on the Prairies
   Tk 231—18 minutes
4. Trees for Tomorrow
   T-30—15 minutes

5. Soil for Tomorrow
   Tk 264—40 minutes
6. Soil and Life
   Tk 439
7. Life in the Western Marshes
   Tk 640—14 minutes
8. Gift of the Glaciers
   Tk 968
9. Your Forest Heritage
   Tk 861

FILMSTRIPS

1. Soil Resources
   Pk 2451
2. Forest Resources
   Pk 2452
3. Water Resources
   Pk 2454
4. Soil Conservation Series
   P 1534—P 1541
5. Saving the Soil
   Pk—1285

SLOGANS: (Suitable for Posters, etc.)

The Forest is the Spinal Column of Canada's Economy.
Keep Our Forests Green.
Prevent Forest Fires — It Pays.
An Hour of Fire Can Destroy a Century of Growth.
The Only Fire that is Out is the One that is Dead Out.
"He That Planteth a Tree is a Servant of God"—Henry Van Dyke.
"I Think That I Shall Never See A Poem Lovely As A Tree"—Joyce Kilmer.
Woods, Waters and Wild Life — Nature's Perfect Partnership.
The True Sportsman is a Crusader for Forest Conservation.
The Forest is Wild Life's Board and Lodging.
Good Fishing and Green Forests go Together.

WATER EROSION

WIND TAKES THE TOP SOIL

Courtesy Department of Agriculture

SECTION II — CONSERVATION OF SOILS

("The Soil, like Freedom, is not appreciated until it is endangered.")

Objectives

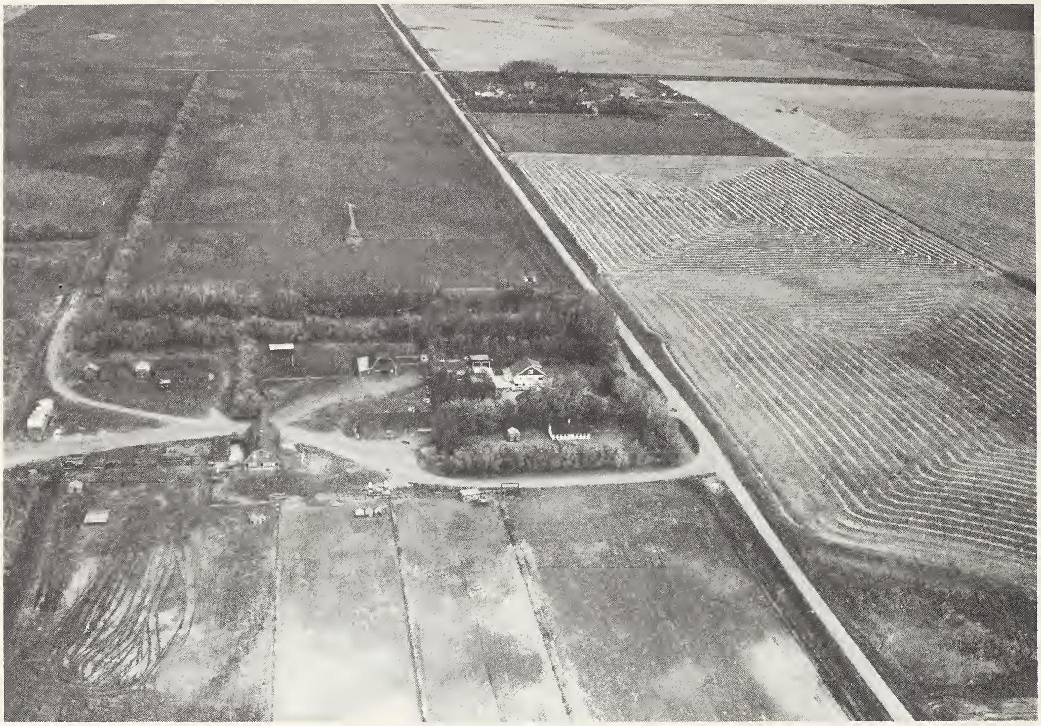
1. To teach the need for conservation of our soils.
2. To increase the pupils' understanding of our vast soil resources and their geographical location.
3. To make the pupils aware of the valuable work of the Federal and Provincial Departments of Agriculture and the Schools of Agriculture at the various Canadian Universities.
4. To teach the causes of the gradual loss of our soil resources.
5. To teach proper methods of handling the different soils and renewing their fertility.
6. To develop an appreciation for the fact that soil erosion results in poorer crops and poorer health for the animals and people dependent on these crops.

Motivation

1. Have pupils make a survey of our agricultural products other than those obtained from our forests. (Crops, poultry, animals, etc.)
2. Have pupils discuss questions related to the use of the soil and its conservation, such as:
    - (a) Do soils lose their fertility, and if so, how can this be prevented?
    - (b) Are some soils naturally deficient in some types of plant food, and if so, how can these be added to the soil?
    - (c) Is diversified (mixed) farming more likely to be successful than a concentration on one or two crops? Why? or why not?

PROBLEM	ACTIVITY	REFERENCE
1. What is the extent of Canada's developed soil resources now being used for pasture and crops?	1. Make maps of Canada showing areas of cultivated land and showing areas that may eventually be added to these.	1. Maps of Types of Farming Areas, Dept. of Trade and Commerce, Ottawa.
	2. List the different types of soil and state their main characteristics, etc. (Proportions of sand, clay and humus, water holding capacity, friability (ease of cultivation).)	N.B.—For integration or correlation with science, test these soils for moisture holding capacity and organic and mineral content.
	3. Make a collection of samples of different soils and sub-soils near your school.	
	4. Make bar graphs showing the value of Canada's agricultural products other than forests.	Canada Year Book
	5. Compare the soil resources of the different provinces as to area and fertility.	"Farming in Canada"— Department of Agriculture, Ottawa.
2. What are the chief dangers threatening our soil resources and how can we avoid these?	1. What is the nature of the soil and how does it contribute to the welfare of living things?	
	2. What are the chief weathering agents and how do they do their work?	
	3. Report on the effects of growing the same crops year after year on the same land and on the values of crop rotation.	"Save Our Soil" by D. Nesbitt, Alberta Wheat Pool, 1950.
	4. Report on the effects of 'Soil Drifting' and on the value of crop rotations in combatting it.	"Cropping for Profit and Permanency"— Department of Extension, University of Alberta.

PROBLEM	ACTIVITY	REFERENCE
	5. Plan 3, 4 and 5-year crop rotations suitable to your own area. 6. Plan and carry out a field trip to study water erosion in your district. Examine soil profiles at roadside cuts, etc. 7. Report on the damage done to soils by fire.	“Water Erosion in Alberta,” Dept. of Extension, U. of A. ‘Trash Cover Prevents Soil Erosion’—Line Elevators Farm Service. Canadian Nature, Jan. Feb., 1954.
3. What are our governments and universities doing to help solve the problem of conservation of our soils?	1. Make a map of Canada showing the location and extent of Dominion and Provincial Farms and Agricultural Colleges. 2. Make a table display of an experimental farm in or near your community. 3. Report on the value of Schools of Agriculture in the universities. 4. Have your district agriculturist give a talk on soils. 5. Make a field trip to an experimental farm or a university farm in your community.	
4. What can I do as a Junior Citizen to help conserve our soil resources?	1. Plant a garden and care for it. 2. Experiment with green, and barnyard manures, and commercial fertilizers and report on them. 3. Experiment in your classroom with plants growing in various types of soil. 4. Have a member of your local 4-H Club speak on the “Care of the Soil” or some related topic. 5. Make a survey of the farm lands in your area to see if any farmer is using: a) Contour farming b) Contour strip cropping c) Contour terraces d) Crop rotations that include pasture and legumes.	“Conservation Good Turn, 1956”, published by the Boy Scouts Association, Canadian Headquarters, Ottawa 4. “Conservation Bulletin”. The Boy Scouts Assn., Alberta Provincial Council, near Low Level Bridge, Edmonton.
5. Consider the question: “Should I Become a Farmer?”	1. Hire out to a farmer for the summer. 2. Discuss city and country life.	“Public Lands Open for Settlement—Central Alberta”. Public Land Open for Settlement — Peace River, Alberta.



EVIDENCES OF SOIL EROSION ON THIS OTHERWISE BEAUTIFUL FARM

SOIL CAN BE HELD ON HILLTOPS WHEN THE TREES ARE NOT REMOVED

Courtesy Dept. Economic Affairs

SECTION III — CONSERVATION OF WATER

Objectives: The following paragraph summarizes these splendidly:

> "Water is universal. It is a major part of every living thing. Its value and importance cannot be over-estimated because all life ultimately depends upon water for its very existence. Where water supplies are deficient, unstable or polluted, civilization's progress is seriously retarded."
>
> —O. M. McConkey in "Conservation in Canada" page 65.

N.B. This section provides an excellent opportunity to correlate with science.

PROBLEM

1. **What is the Source of Water?**
   A. All forms of precipitation.
2. **What are the different types of water supply and their characteristics?**
   A. Snow-fed streams.
   B. Rain-fed streams.
   C. Ground Water.
3. **What uses does man make of water?**
   A. The use of water in times past
   B. Hydro-electric power
   C. Water in industry and in the home
   D. Support of plant and crop growth
   E. Water for stock, etc.
   F. Support Wild Life and recreation
   G. Navigation
   H. Irrigation
   I. Fire Protection
   J. Hydraulic Mining
4. **Water: Friend or Enemy?**
   A. Controlled: An **Asset.** See uses above.
   B. Uncontrolled: A **Liability.**
      1. Erosion of top soils and gullies.
      2. Destruction of farms, cities, roads, etc. (Winnipeg or Edmonton floods.)
      3. Floods.
      4. Waterlogging of land.
      5. Accumulation of alkali in soils.
5. **How may floods be controlled?**
   (a) At least 20% of lands should have forest cover.
   (b) Cooperation of all urban and rural communities in the watershed.
6. **What is the value of farm ponds?**
   (a) Eastern Canada
   (b) Western Canada
7. **How is my community supplied with sufficient pure, fresh water?**
8. **What of the beaver as a conserver of water supply?**

ACTIVITY

1. (a) Draw a diagram of the Hydrologic Cycle. See page 65 of McConkey.
   (b) Collect pictures illustrating different forms of precipitation.
2. (a) Make a survey of your community as to the types of water supply found there and their value.
   (b) Make a map of your community water supply area.
3. Make a graph or chart to show the large amounts of water needed for the production of common crops such as: corn, wheat, hay, etc.
4. Study the effects of uncontrolled water in your community by planning a field trip. (N.B. Great caution should be used at the time of floods because of the danger of drowning.)
5. Study signs of upsetting of water balance in Canada. McConkey, p. 68.
6. Make a graph or chart showing the reduction in forest cover for stream watersheds in Canada. See Alberta Government Pamphlet, "Alberta Forests" and McConkey, page 76, "Floods and Flood Control".
7. Make an actual survey of floods control efforts in your community:
   (a) Small and large dams.
   (b) Reservoirs.
   (c) See a film on the Tennessee Valley Authority. Visual Aids Section of the Department of Education.
8. Report on Dominion Government program to assist farmers in making dams and ponds, and in the building of large dams, e.g. St. Mary's River Dam. Conservation Projects in Canada, McConkey, page 196.
9. Visit your community's water works
   (a) Study carefully the source of your water supply for your city
   (b) Study any water pollution in your area
10. Visit a beaver dam or study pictures showing the work of beavers as dam builders.
11. Find out what the term "water need" means and what factors affect it.

A PLEDGE TO LEARN

I give my pledge as a Canadian to defend from waste, to work for the wise use and good management of my country's natural resources—its soil and minerals, its forests, waters and wild life.

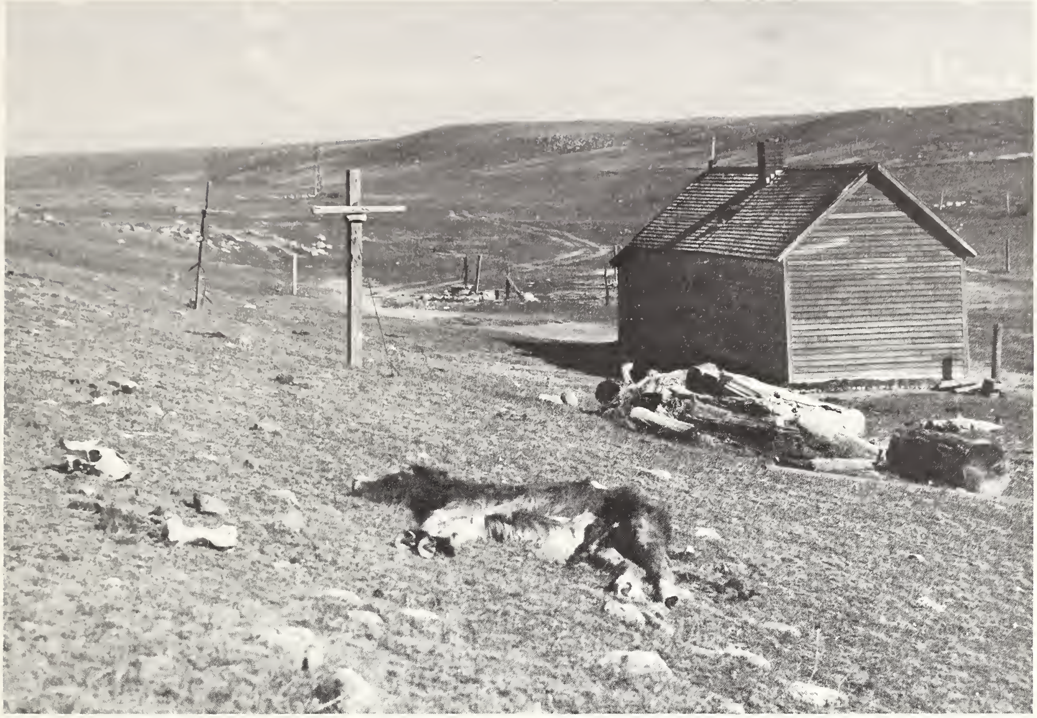
BIBLIOGRAPHY FOR "CONSERVATION OF WATER"

BOOKS AND PAMPHLETS:

Rocks, Rivers and a Changing World—Book Society of Canada.
Conservation of Water in New York—Grade Teacher, April, 1950.
Water Power in N.W.T.—Dominion Government Pamphlet.
Water—School-Book Branch, Department of Education, Alberta.

FILMSTRIPS:

Department of Extension, University of Alberta.
A 1149—"Water—Friend or Enemy"
A 1859-60—"Let's Look at Water" (City Supply)
A 160—"Rain in the Plains" (Erosion)
A 326—"Work of Rivers"
A 870-2—"The River" (Mississippi)



AN ABANDONED FARM NEAR MEDICINE HAT WHERE THE RAINFALL IS ABOUT 12" PER YEAR

IRRIGATION IN SOUTHERN ALBERTA

Courtesy Dept. Economic Affairs

SECTION IV—CONSERVATION OF CANADA'S MINERAL WEALTH

Although little concern is now being shown regarding conservation of our Mineral Resources, it should be noted that during the period 1900-1950 the quantity of metallic minerals used in the world was greater than that of the whole preceding period from the beginning of time.

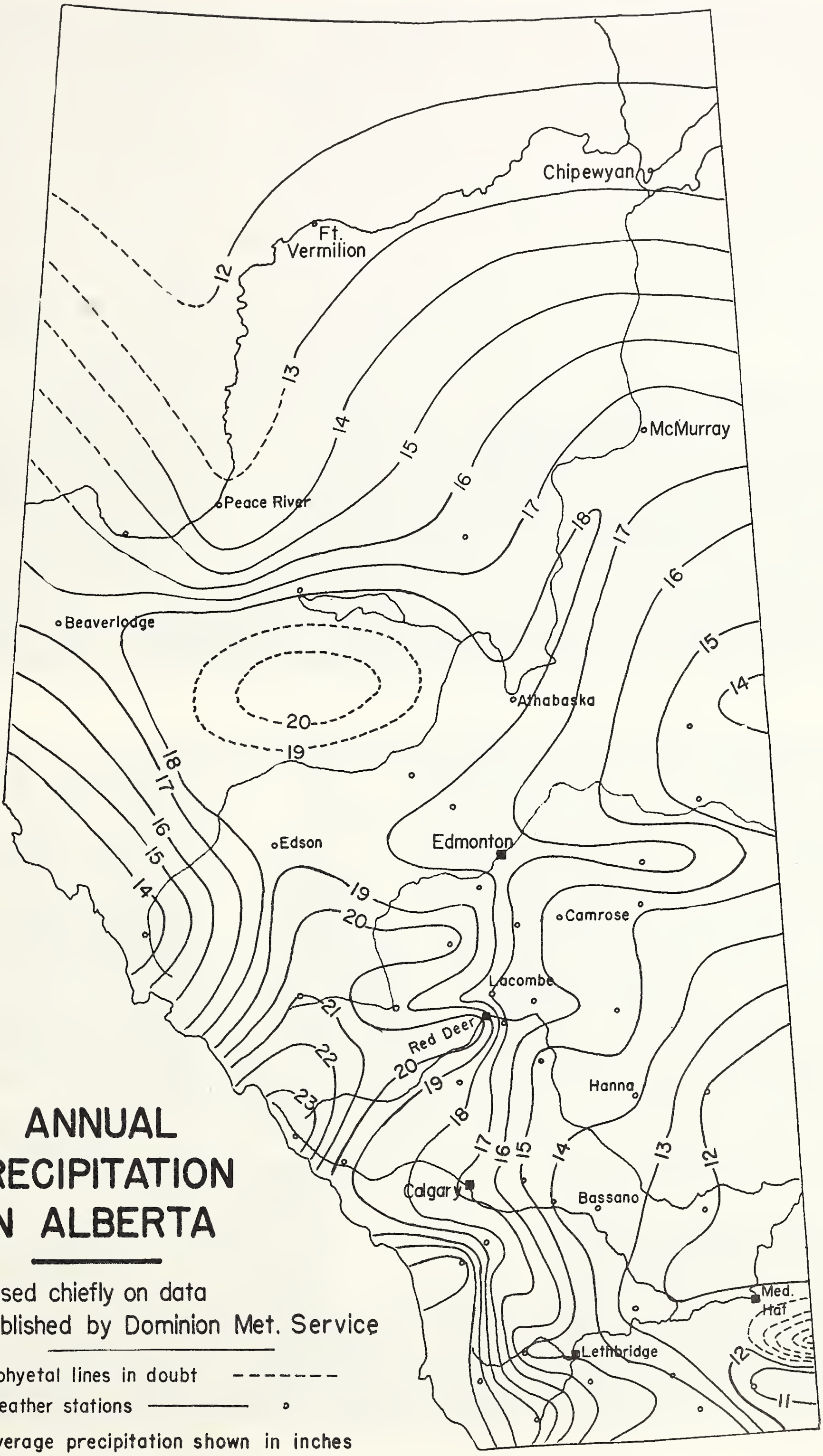
PROBLEM	ACTIVITY
1. How is Canada's Mineral wealth being wasted?	Collection of metals to show effects of corrosion and rust.
(a) Rusting and corrosion of metallic machinery and equipment requires frequent replacement.	
(b) Our scrap metals are not being reclaimed but allowed to waste away in dumps.	Bar graph showing increased use of metals in Canada —Canada Year Book.
(c) Low-grade ores are not being refined.	Show diagram of graph from Canada Year Book.
(d) By-products are often wasted. (Nitrogen and phosphorus compounds which can be used for fertilizers.)	
N.B.—Some of these by-products are being put to proper use at Trail, B.C. and Sidney, N.S.	Write the Consolidated Mining and Smelting Co. at Trail, B.C. for information and display samples.
2. How can we prevent such wastes?	
(a) Use of rust preventatives and materials to prevent corrosion. Case-hardening to cut down on wear, e.g. carburizing, nitriding.	Collection of metals to show tinning, plating, galvanizing, glazing, enamelling, painting, etc.
(b) 34% of our brass used in Canada is reclaimed brass. Aluminum, nickel, lead and copper are being reclaimed. World War I brought about great advances in reclaiming of metals, especially iron.	
(c) Research to find new methods of refining low grade ore—the pyrites, one of which is "Fool's Gold"—a source of iron. White clay which is rich in aluminum.	
(d) Use of substitutes for metals and their advantages: plastics wood veneers glass fibres asbestos	Arrange a display of samples.
Make a survey of the mining areas in Canada.	(a) Draw a map of Canada showing the mining areas developed and undeveloped and show what minerals are mined or undeveloped.
N.B.—The teacher here might make some mention of:	(b) Send to Dept. of Mines (Dominion Gov't.) for set of mineral samples (Cost $1.00).
(a) Kitimat Aluminum	(c) Write to Aluminum Company of Canada for free booklet.
(b) Consolidated Mining and Smelting	
(c) Chalk River Atomic Plant, with special emphasis on peaceful use of atomic energy.	

FILMSTRIPS

Pk 2455—Mineral Resources

BIBLIOGRAPHY

*1. **Exploring in Science**—Craig-Hurley.
2. **This Useful World**—Sears, Quillan and Hanna.
*3. **Working With Science**—Craig-Hill.
*4. **Geography of a Working World**—McConnel and Harter.
5. **Canada Year Books**
6. **New Roads to Mineral Abundance**—Rosin and Eastman.
Readers' Digest (July 1953).



ANNUAL PRECIPITATION IN ALBERTA

Based chiefly on data published by Dominion Met. Service

Isohyetal lines in doubt -------

Weather stations ———— o

Average precipitation shown in inches

MUCH OIL WAS WASTED WHEN THIS WELL WENT WILD

STOCKING A LAKE WITH FISH

Courtesy Dept. of Economic Affairs

SECTION V — THE CONSERVATION OF NATURAL GAS AND OIL

Interest in oil and gas development in Alberta should provide sufficient motivation.

Special Objectives

(a) To develop a realization that our natural gas and oil reserves can be exhausted.
(b) To acquaint the pupil with our present thriving industry.
(c) To study some of the products and by-products of the oil industry.

SUGGESTED PROBLEMS	SUGGESTED ACTIVITIES
1. Where are our natural resources of oil located?	(a) Have pupils draw a large map of Canada indicating the present major resource areas. (b) Animated maps (c) Collect pictures of various oil fields. (d) Read the "Oil News" in your daily paper. (e) Have pupils contact various oil companies by letter asking for information. (f) Study about the major oil fields of Alberta. (g) A report of the Alberta Oil Sands along the Athabasca River.
2. Where are the principal natural gas fields?	(a) Construct maps locating the important gas fields. (b) Contact various natural gas companies. (c) Visit the local Northwest Gas Company to learn as much of their activities as possible. (d) Have a talk by a member of the gas company.
3. Where do we export our natural gas and oil?	(a) Construct miniature pipe lines on a large map showing the general location of the Trans-Canada and Trans-Mountain pipe lines. (b) Draw a world map using arrows to indicate major importing and exporting countries. (c) Construct bar graph showing the increased productivity of gas and oil in the last 25 years in Canada.
4. Why is export of oil and natural gas restricted?	(a) Study briefly the problem facing the Alberta government re oil and gas. (b) Find out the estimated oil reserve of Canada. (c) Write to the Department of Economic Affairs for the "Alberta Oil Review". (d) Current events.
5. How can we prevent waste in the refining of oil?	(a) Study methods used to prevent fires in oil-drilling techniques. (b) Draw a "Petroleum Tree" which indicates the various products and by-products of oil. (c) Contact the Imperial Oil Company for the pamphlet "Oil from the Earth". (d) Visit an Oil Refinery.
6. How may we as Canadian citizens conserve our natural resources of oil and gas?	(a) Class discussion of this problem. (b) Make sure there are no natural gas leaks in your home. (c) Study the amount of gas and oil used by cars, planes, diesel engines. (d) Learn to read your gas meter and calculate the bill.
7. Some consideration of new sources of energy and materials to replace those being used.	(a) Discussion of the extent of the problem. (b) Reports on Chalk River experiments. (c) Reports of uses made of waste products in plastic, propane, butane, etc.

BIBLIOGRAPHY

1. Baer, M. E. **Pandora's Box: The Story of Conservation.**
2. McConkey, O. M.: **Conservation in Canada**
3. Van Dersal, W. R. & Graham, E. H.: **Land Renewed.**
4. Whittemour, A. Reginald: **Conservation and Nature Activities.**

Oil

1. Bayles, Ned: **Story of Oil**
2. Fawcett, Raymond: **Where Does It Come From?**
3. Jackson, Ann: **Wonder of Oil**
4. Petersham, Maud & Miska: **Story Book of Oil**

*5. Proud Procession: **The Gusher**

PAMPHLETS AND BOOKLETS

1. Alberta Oil Review—Province of Alberta.
2. Canada's Search for Oil—Imperial Oil Company.
3. Oil From the Earth—Imperial Oil Company.
4. Oil Seekers, The—Imperial Oil Company.
5. Guide to the Alberta Oil Sand Area—Government of Alberta.
6. Grade Teacher, The—April, 1952.

FILMS AND FILMSTRIPS

Filmstrips on Conservation—H. A. Gray and King Edward Schools have sets of filmstrips on conservation.

Imperial Oil Films—
Search Unending—20 min. T 936. Underground East—20 min. Tk 954
Mile Below the Wheat—20 min. Tk 621.

Department of Education—
Tk 621 Oil (A Mile Below the Wheat)—20 min.
T 299 Petroleum (Oil)—11 min.
T 263 The Story of Oil—14 min.

Filmstrip—P 1237 Oil in the Modern World
P 1435 How We Get Our Oil
P 2071 Oil From the Earth to You
P 2072 Petroleum in Today's Living

Dept. of Extension—
A 2083 - 4 Oil for Canada.

AN ALBERTA FOREST NEAR PILOT MOUNTAIN

BUFFALO ONCE ROAMED THE PLAINS

Courtesy Dept. Economic Affairs

SECTION VI—CONSERVATION OF WILD LIFE

Specific Objectives

To develop a sympathetic understanding of wild animals and birds for their own sake and an appreciation of the value of conserving them.

PROBLEM I—WHY IS CONSERVATION OF WILD LIFE NECESSARY?

Deal with things that cause great hardships and depletion of our wild life.

Suggested Areas of Study and Investigation	Suggested Activities
(1) Consider summer drought and severe winter weather and its harsh effect upon wildlife.	
(a) Starving of elk, deer and antelope in severe winters.	Inquire into action taken by Provincial Government.
(b) Blizzards kill off large numbers of birds in the winter.	
(c) Young ducks perish as sloughs or ponds dry up in the summer time.	Inquire into action taken by Ducks Unlimited.
(2) Thoughtless killing.	Posters on Protection of Birds and Animals theme.
(a) Of birds and animals with fire arms.	
(b) Over-hunting in fall of the year.	
(c) Birds and animals left wounded during hunting seasons.	
(3) Lessons on Balance of Nature.	Diagram showing balance of nature.
(4) Carelessness in forests causing forest fires and great hardships to animals in the area.	

PROBLEM II—STUDY OF WHAT IS DONE IN WILD LIFE CONSERVATION IN CANADA

Suggested Areas of Study and Investigation	Suggested Activities
(1) Inquire into local Fish and Game Societies and other sportsmen's clubs.	Have speaker from Fish and Game Society speak on Conservation. Have local Game Warden speak.
(2) Outline work done by Ducks Unlimited of Canada. Discuss manner in which Ducks Unlimited works in its wildlife conservation program.	Visit bird sanctuary or zoo. Show Ducks Unlimited film. Write Ducks Unlimited of Winnipeg for information concerning their work, or contact office in Edmonton.
(3) Teach recognition of the common ducks and geese of Alberta. Distinguish between diving ducks and surface feeders. Inquire into Pheasant Hatchery at Brooks, Alberta.	Have students sketch different heads of ducks. Study different plumages of the ducks. Art project: a typical duck marsh, having students draw marsh and different types of ducks. Plan a field trip to view ducks in natural habitat. Classroom scrapbook of Ducks and Upland Game.
(4) National Parks and protection of wildlife within them.	Collect publicity from National Parks for display. Have pupils that have visited these parks report on what they have seen.
(5) Bird Sanctuaries and their purpose.	
(6) Importance of game laws and hunting seasons in wildlife conservation. Stress need of abiding by these laws.	List animals protected in Banff National Park. Visit a Bird Sanctuary if possible. Committee do a report on Jack Miner. Study of Alberta's Game Laws from pamphlets.

FILMSTRIP:

Pk 2453—Wildlife Resources

PROBLEM III—DEALS WITH SITUATIONS WITHIN CANADA WHERE CONSERVATION HAS NOT BEEN PRACTISED

Suggested Areas of Study and Investigation	Suggested Activities
(1) Depletion of the buffalo herds in Canada.	(1) Plot areas on a map of prairie provinces where the buffalo roamed in mass.

Suggested Areas of Study and Investigation	Suggested Activities
Importance of the buffalo as food for the aboriginal tribes of Canada.	Committee Report.
(2) (a) The near extinction of the Whooping Crane and extinction of Passenger Pigeon.	Show pictures of these birds.
(b) Stress scarcity of hawks and owls in Alberta because of unwarranted slaughter.	Discover the types of food eaten by hawks and owls. Stress the value of hawks in insect and rodent control.
(c) Near extinction of Great Grey Owl in Alberta.	List values of these birds to farmers.
(3) Discuss the over-trapping of beaver during the last century by Indians to supply the wants of the fur trade.	Diagram: a beaver dam. Visit a beaver dam. Read a story of Grey Owl and his work with the beavers. Inquire at Hudson's Bay Company, Beaver Office, Winnipeg, concerning what has been done to conserve the beaver of Canada.

PROBLEM IV—WHAT WE AS INDIVIDUALS CAN DO TO PROTECT THE BIRDS AND ANIMALS OF OUR AREA

Suggested Areas of Study and Investigation	Suggested Activities
(1) Inquire into the living and feeding habits of birds and animals in your neighborhood.	Feed birds around home and around the school in winter season. Have pupils list different types of birds they discover in the area. Construct a bird feeding board. Have pupils form or join bird clubs.
Inquire into the work and organization of the Audubon Society.	Have members of the Audubon Society speak to pupils concerning what they do to protect birds of the region.
(2) Discuss the reasons why we should not: (a) destroy birds' nests (b) stone birds (c) kill harmless animals (d) hunt game and let it spoil (e) take on a general attitude that wild birds and animals are simply there to be destroyed.	Make chart of rules to follow in protecting your wildlife.

BIBLIOGRAPHY

Students' References

BOOKS

1. **Through The Seasons** (Chapter 8)
Victor C. Smith and Barbara Henderson—Lippincott
2. **Beneath the Skies** (Chapter 8 and 9)
Victor C. Smith and Barbara Henderson—Lippincott
3. **Understanding Why** (Chapter 8)
T. I. Dawling and K. Freeman, Nan Lucy and James S. Tippett—Winston.
* 4. **New Ideas in Science** (Chapter 5)
Craig - Hyde (Ginn)
* 5. **Working With Science** (Chapter 14)
Craig - Johnson (Ginn)
6. **Pathways in Science** (Series)
Our Earth and Its Story
Craig - Johnson (Ginn)
* 7. **Saving Our Wildlife**
B. M. Parker, G. K. McCosh (Row and Peterson)

* 8. **Animals That Live Together**
Glenn O. Blough, B. M. Parker (Row and Peterson)
* 9. **Animals Round the Year**
Glenn O. Blough, B. M. Parker (Row and Peterson)
*10. **Animal Travels**
B. M. Parker, T. Park (Row and Peterson)

PAMPHLETS CONCERNING WILDLIFE CONSERVATION

DOMINION GOVERNMENT

Hunters and Hunted — Stephen Collins
Canadian Wildlife Service, Ottawa.

Three Lessons on Bird Protection —
Department of Resources and Development,
National Parks Branch,
Canadian Wildlife Service, Ottawa.

Attracting Birds With Food and Water —
R. Owen Merriman,
Department of Resources and Development,
Canadian Wildlife Service, Ottawa.

Prevent Duck Damage — Department of Resources and Development,
Canadian Wildlife Service, Ottawa.

The Duck Problem — Department of Resources and Development,
Canadian Wildlife Service, Ottawa.

Birds Near Extinction — Whooping Crane, Ross's Goose—
Department of Resources and Development.

PROVINCIAL GOVERNMENT

Western Hawks — Forest and Wildlife Division,
Department of Lands and Forests,
Edmonton, Alberta.

Game Regulations — Fish and Game Commissioner,
Department of Lands and Forests,
Edmonton, Alberta.

The Great Grey Owl — (Have You Seen This Bird?)
Department of Lands and Forests,
Edmonton, Alberta.

Trapping and Transplanting Live Beavers —
Conservation Bulletin 30,
Fish and Wildlife Service—U.S. Department of Interior,
(Obtained through Department of Lands and Forests, Edmonton, Alberta.)

MAGAZINE SUGGESTIONS

National Wildlife and Conservation Digest
Kearne Publication Limited,
704 McIntyre Building,
Winnipeg, Manitoba, Canada.

Wildlife Digest
Western Canada Publishers,
175 King Street,
Winnipeg, Manitoba.

Rod and Gun in Canada
Field and Stream Magazine — **Sports A-Field Magazine**

SECTION VII—CONSERVATION OF CANADIAN FISHERIES

Specific Objectives: To develop a genuine interest in the "finny tribes" in their value to Canada, and the importance of their conservation.

PROBLEM I—WHAT IS THE VALUE OF OUR COMMERCIAL FISHERIES?

Suggested Areas of Study and Investigation

(a) Total value of annual Canadian catch in detail.
(b) Total value of that part of the catch consumed in Canada in detail.
(c) Total value of fish imports in detail.
(d) Total value of exported fish in detail.
(e) How is the balance of trade as far as our fisheries are concerned?

Suggested Activities

(1) Preparation of simple bar graphs to show each of the phases of this problem.

References (a) **Canada Year Book**
(b) Reports of Department of Fisheries.

PROBLEM II—WHAT NEED IS THERE FOR CONSERVATION OF FISHERIES IN CANADA AND WHAT ARE THE DOMINION AND PROVINCIAL GOVERNMENTS DOING ABOUT CONSERVATION?

Suggested Areas of Study and Investigation

(a) The history of the salmon fisheries in the Pacific. See "The Beaver", March 1953.
(b) The diminishing supply of commercial fish in our inland fisheries.
(c) The depletion of our sporting or game fish.
(d) The treaty of 1937 establishing the International Pacific Salmon Fisheries Commission and the results of its operation.
(e) Where are the fish hatcheries in Canada and how effective is their work?
(f) What is the future of the Canadian Whaling and Sealing industries?

PROBLEM III—(PERSONAL)

How conservation minded am I when I am actually out fishing?

(a) Do I keep within the law?
(b) Do I waste fish?
(c) Am I careful in the way I handle fish?

Suggested Activities

(1) Careful study from mimeographed maps of the Sockeye Spawning Grounds in the Fraser River Watershed of British Columbia. See fine article and map in "The Beaver, A Magazine of the North", British Columbia Issue, March, 1953.
(2) Discussion based on content of above article to show the establishment by treaty of the International Pacific Salmon Fisheries Commission of 1937 and the value of its work.
(3) Drawing of a picture graph to illustrate the 4-year sockeye cycle of the Pacific Coast.
(4) On an outline map of Canada, mark the fish hatcheries and note the species and numbers of their output.
(5) On an outline map locate the whaling and sealing centers and the ocean areas covered in the search for whale and seal.

Go on a fishing trip and check up on my behaviour as a fisherman.

CULMINATIONS

1. An exhibition of graphs, maps, charts, samples of minerals, plastics, and scrap books. Use table displays to which parents of the pupils and other teachers and classes are invited. Pupils are in charge and explain details of exhibition.
2. A tableau or play written by the class in which pupils represent different natural resources, minerals, fish, etc., to illustrate waste, and methods of conservation of our natural resources.

EVALUATION

1. Identification test or tests on forms of wild life, trees, minerals, signs of erosion, etc.
2. Map tests to cover location of natural resource areas, their extent and nature.
3. Write a paragraph on some phase of conservation of particular interest to each student. The teacher lists possible topics.
4. An objective test on factual knowledge acquired.
5. Discussion of poems and songs integrated to evaluate appreciation of natural resources as things of beauty.

FILMS AND FILMSTRIPS

Grade 6 Science — 1. Conserving Our Resources Nos. 247-254 Curriculum Films Inc.
2. University of Alberta—Dept. of Extension (Sound Films)
3. 10 East 40th Street, New York 16, N.Y.

Note:—All films having A in their code number are distributed by the Extension Dept. of the U. of A. All those with T or Q in the code number are distributed by the Audio-Visual Aids Branch of the Department of Education.

	First Aid on the Spot T1089
A3060	Artificial Respiration
A3119-20	The Torch (first safety)
A1149	Water—Friend or Enemy Tk 32
A1859-60	Let's Look at Water (City Supply)
	City Water Supply T 71
	Pipeline to the Clouds Tk 967
A3112	North America Elk (Conservation)
A3114	Nature's Engineer (The Beaver)
A671	Birds of Canada #1 Tk 98
A1069	Birds of Canada #2 Tk 867
A1080	Life on the Western Marshes (Conservation) Tk 640
A1082-3	Salmon Run (Life Cycle of Sockeye Salmon) Tk 169
A1295	New Homes for Beavers (Conservation) T 367
A1873-4	Bird Sanctuary
	Red Runs the Fraser Tk 570
	Look Alert, Stay Unhurt T 1063
	Birds of Canada #3 Tk 868
	Birds of Canada #4 & 5 Tk 869
	Birds of Canada #6 Tk 870

AGRICULTURE

A160	Rain in the Plains (Erosion)
A911-2	Just Weeds (Control) Tk 85
A1286-7	Wind Breaks on the Prairies Tk 231
A1386-9	Soil for Tomorrow (Conservation) Tk 264
A1448	Soil and Life (Conservation) Tk 439
A1577-8	Land from the Sea (Nova Scotia) Tk 632
A1681-2	Strips and Curves (Control of Land) Tk 1083
A1805	Our Soil Resources (Conservation) T 505
A1948-9	Vegetable Insects (Control) Tk 634
A2401	Birth of the Soil (Appreciation)

BIOLOGY

A1514	Life in the Balance T 441
A2405	The Forest Grows
A2406	The Forest Produces
A2407	Forest Conservation
	World in a Marsh Tk 1140

EARTH AND UNIVERSE

A326	Work of Rivers T 134
A1145	Great Canadian Shield Tk 226

GENERAL

A476	Maple Sugar Time Tk 410
A541	Return of the Buffalo
A990	Gaspe Cod Fishermen T 333
A1141	Trappers of the Sea Tk 230
A2424-5	Canada's New Farmlands
A2454-5	A Mile Below the Wheat (Oil) Tk 621
A988-9	Fur Country Tk 237
A993-4	Land for Pioneers T 20
A1931	Fur Trade (Historical) T 412

CONSERVATION

A1286-7	Windbreaks on the Prairie Tk 231
A2402	This Vital Earth
A2403	Arteries of Life
A2404	Seeds of Destruction
A2585	We Make A Fire
A3324-5	Your Forest Heritage Tk 861
A3333-6	Steel for Canadians Tk 877
A172-4	Canadian Pine
A175	The Sage of the Silver Horde (Salmon)
A216	Fresh Water Fishing
A243-5	Unlocking Canada's Treasure Trove
A324	Shelter T 128
A1237	Plastics
A1708-9	More Food from Fewer Acres
N.B.	Also see Films and Filmstrips—National Film Board of Canada.
N.B.	For more films and filmstrips suitable for Unit 5, see Classified List Audio-Visual Aids Branch—Department of Education, Edmonton.

BIBLIOGRAPHY (GENERAL, FOR WHOLE UNIT)

A — TEACHER
B — STUDENT

	Water — School-Book Branch, Department of Education
B	Trees — School-Book Branch, Department of Education
B	Saving Our Wild Life — School-Book Branch, Department of Education
A — B	Conservation in Canada — O. M. McConkey
B	Fishing in Alberta — Queen's Printer, Alberta
A — B	Van Loon's Geography — Garden City Publishing Co.
A	Principles of Human Geography — Huntingdon and Cushing
A — B	Features of Present Day Canada — Book Society of Canada
A — B	Rocks, Rivers and the Changing World — Book Society of Canada
A — B	Fifty Trees of Canada — Book Society of Canada
A — B	"Conservation of Water N.Y." — Grade Teacher April 1950 Experiment — Page 64
A — B	"Forests Forever" — Grade Teacher, October 1952
A — B	"Wisdom in Woods" — Grade Teacher, October 1953
A — B	Bird Banding in Canada — Dominion Government Pamphlet
A	Natural Resources of N.W.T. & Yukon — Dominion Government Pamphlet
A — B	Fur Trade in N.W.T., 1952 — Dominion Government Pamphlet
A — B	Canadian Arctic Plant Life — Dominion Government Pamphlet
A — B	The Great Slave Lake Fisheries — Dominion Government Pamphlet
A — B	Water Power in N.W.T. — Dominion Government Pamphlet
A — B	Agriculture in N.W.T. — Dominion Government Pamphlet
A — B	The Buffalo Herd — Dominion Government Pamphlet
A — B	"The Barrens" — Ground Caribou — Dominion Government Pamphlet
B	Fire — School-Book Branch, Department of Education
A	List of Publications — Dept. of Resources and Development, Ottawa
B	Earth, A Great Storehouse — School-Book Branch. Department of Education
A — B	Bird Houses and Their Occupants — P. A. Taverner, Queen's Printer, Ottawa
B	Fishes — School-Book Branch, Department of Education
B	Alberta, Western Treasure Chest — Boon and Boon, School-Book Branch, Department of Education
	Canada and Her Neighbors — Taylor et al, School-Book Branch, Department of Education
B	Our Resources — Canadian Citizenship Branch, Ottawa
B	Insects and their Ways — School-Book Branch, Department of Education
B	Hunters and Fishers, Book 1, by Rayner — School-Book Branch, Department of Education

B	Garden and Its Friends — School-Book Branch, Department of Education
A — B	Attracting Birds with Food and Water — R. Owen Merriman, Queen's Printer, Ottawa
A — B	Three Lessons on Bird Protection — Department of Resources and Development, National Parks Branch, Queen's Printer, Ottawa
A — B	Hunters and Hunted — Department of Resources and Development, Ottawa
A — B	Some Aspects of Canadian Birds and Some Familiar Species by A. L. Rand — Department of Resources and Development, Ottawa
A — B	Department of Mines and Technical Surveys — Surveys and Trapping Branch, Map of Distribution Office — List of General Maps — (Send for)
B	Nature Guide for Farmers: Wood — School-Book Branch, Department of Education
B	Plant and Animal Partnerships — School-Book Branch, Department of Education.

CORRELATION

ART

1. Posters re Forest Fires, Wild Life, Lumbering, Water Power (falls).
2. Murals — for display background, e.g. behind a table showing Fire Ranger's Work.
3. Painting scenes, depicting ideas — forest fires, soil drifting, oil derrick, strip farming, hunting, fishing, water erosion, floods, etc.
4. Diagrams — Water Cycle; Balance of Nature; Power Plant, etc.

Graphs or Charts } Value of forests, minerals, wildlife
Depletion of forests, minerals, wildlife

Maps—1. Regional maps in color — forests, oil, coal, minerals, fish.
2. Maps showing habitat of animals and birds.
3. Migration of birds.
4. Maps showing pipe lines.

5. Study of paintings, etc. — trees, animals, etc.

HEALTH AND PHYSICAL EDUCATION

1. Prince Albert water supply problem.
2. A study of the food and eating habits of birds, animals, fishes, etc.
3. Providing shelter for our wild life.
4. The necessity of water for the conservation of life.
5. Water, the medium of cleanliness.
6. Treating burns, scalds, and first aid generally.
7. Artificial Respiration (included in first aid).

LITERATURE

Forestry Lessons: Canadian Department of Resources and Development, Forestry Branch. (Excellent.)

The Old Man and the Sea: Hemingway.

The Sower: Sir Charles G. D. Roberts.

Proud Procession

Sourdough Drive	— p. 66
The Gusher	— p. 121
Johnny Courteau	— p. 211
Gilbert Labine's Discovery	— p. 265
Power	— p. 249
Radar, The Magic Eye	— p. 270
The Gold Rush	— p. 413
Glasier's Men	— p. 400
Silver Fox	— p. 434

All Sails Set

The Forest Fire	— p. 37
Sockeye	— p. 66
Notchtail the Beaver	— p. 74
Hard-Rock Miner	— p. 341
Coal Miners	— p. 351

On the Beam

A Fire in the Wilderness	p. 129
Sugar Weather	p. 138
The Little Brown Bees of Ballybourney	p. 214
Weather Signs	p. 353
Hiawatha's Hunting	p. 359
The Cataract of Lodore	— p. 362
From the Bible (First two verses)	— p. 401

LANGUAGE

Writing letters to Provincial and Dominion Departments of Government.
Writing letters to experimental farms and stations.
Writing stories of forest fires, camping, etc., etc.
Write a poem on a nature topic.
Writing reports.

DRAMATICS: Writing dialogues and plays, pageants, etc.

SPELLING

Compile and teach list of new words and their meanings. (See the major word list at end.)

MUSIC

Canadian Singer, Book VI

Autumn Holiday
Salerno Fisherman
Threshing Grain
The Shepherd Boy
Near the Fountain
The Tall Pine Tree
My Homeland
April
Garden Melody

The High Road of Song, Book II

September
The World is Full of Beauty
The Bird's Farewell
Autumn Lament
The Woodland Lily
A Spring Song

SCIENCE CORRELATIONS AND INTEGRATIONS

1. (a) A study of fish hatcheries.
   (b) Life history of the salmon — see All Sails Set, page 66.
   (c) Rules and regulations governing fishing.
2. (a) Study useful and harmful birds.
   (b) Regulations governing hunting.
   (c) Construction of bird houses, bird baths, feeding stations, etc.
   (d) Methods of protecting our wild animals; e.g. deer, buffalo, etc.
3. (a) Study of the various types of trees.
   (b) How to determine the age of trees.
   (c) How to plant trees.
   (d) Value of trees.
   (e) Wind protection.
   (f) Insects which destroy trees.
   (g) Fire precaution methods.
4. (a) Various types of soil.
   (b) Soil erosion — wind, water, etc.
   (c) Lack of water, lack of vegetation, etc.
5. (a) The value of water — its uses.
   (b) Water purification methods.
   (c) The development of water power.
6. A study of minerals and their uses.
7. (a) Drilling for gas and oil.
   (b) Methods of transporting gas and oil.
   (c) Where we use gas and oil.

8. **Beneficial Insects**
   (a) Bees
   (b) Butterflies
   (c) Moths
   (d) Dragonflies

HEALTH CORRELATIONS AND INTEGRATIONS

First Aid

(a) Artificial Respiration — Saint John Ambulance Handbook
(b) Treatment of Burns — Saint John Ambulance Handbook
(c) Treatment of Shock — Saint John Ambulance Handbook

MAJOR WORD LIST

conservation
resources
virgin
fertile
erosion
depletion
development
civilization
natural
preservation
government
regulations
exploration
enjoyment
interpret
diagrams
fisheries
survey
forestry
wastage
reserves
debate
carelessness
brushing
moisture
conditions
comparing
specimen
reforestation
responsibility
organization
management
permanent
agriculture
renewing
deficient
diversified
concentration
threatening
eventually
capacity
collection
graphs
weathering
rotation
combatting
suitable
profiles
experimental
community
manures
fertilizers
contour
terraces
pastures
legumes
existence
polluted
unstable
precipitation
hydro-electric
navigation
irrigation
hydraulic
asset
liability
gullies
alkali
accumulation
uncontrolled
watersheds
urban
rural
corrosion
metallic
machinery
equipment
reclaimed
by-products
nitrogen
phosphorus
preventatives
case-hardening
aluminum
titanium
platinum
refining
pyrites
plastics
veneers
asbestos
smelting
atomic
galvanizing
enamelling
restricted
estimate
sympathetic
drought
antelope
blizzards
sloughs
recognition
distinguish
pheasant
sanctuary
plumage
typical
habitat
publicity
abiding
buffalo
extinction
scarcity
unwarranted
rodent
protection
consumed
exported
diminishing
spawning
hatcheries
effective
whaling
sockeye
reservoir

The "Eleventh Commandment" as given by W. C. Lawdermilk, Assistant Chief, Soil Conservation Service, U.S. Department of Agriculture, in a broadcast to the people of Jerusalem on June 11, 1939, was as follows:

"Thou shalt inherit the Holy Earth as a faithful steward, conserving its resources and productivity from generation to generation. Thou shalt safeguard thy fields from soil erosion, thy living waters from drying up, thy forests from desolation, and protect thy hills from overgrazing by thy herds, that thy descendants may have abundance forever. If any shall fail in this stewardship of the land thy fruitful fields shall become sterile stony ground and wasting gullies, and thy descendants shall decrease and live in poverty or perish from off the face of the earth."

University of Alberta Library
0 1620 0361 0670

Printed by
A. SHNITKA, Queen's Printer, Edmonton, Alberta